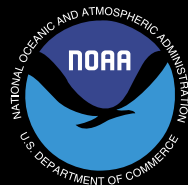




Shoreline Assessment Job Aid

**National Oceanic and Atmospheric Administration • NOAA Ocean Service
Office of Response and Restoration • Hazardous Materials Response Division**



This job aid was produced and published by NOAA's Hazardous Materials Response Division (HAZMAT). All photographs, with exception of the one on the cover, were contributed by Miles O. Hayes and Jacqueline Michel of Research Planning, Inc.

HAZMAT draws on two decades of experience in responding with the U.S. Coast Guard to spill emergencies and resolving the often longer-term problems presented by hazardous waste sites, garnering a reputation for rapid, yet carefully considered and cost-effective environmental protection decisions.



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Shoreline Assessment Job Aid

When oil contaminates shoreline habitats, responders must survey the affected areas to determine the appropriate response. Though general approvals or decision tools for use of shoreline cleanup methods may be developed during planning stages, responders must base specific cleanup recommendations on field data on the shoreline habitats, type and degree of shoreline contamination, and spill-specific physical processes.

A shoreline assessment program is:

- a **SYSTEMATIC** approach that uses **STANDARD** terminology to collect data on shoreline oiling conditions and support decision making for shoreline cleanup.
- **FLEXIBLE** in terms of scale of the survey and detail of the data sets collected.
- **MULTI-AGENCY**, with **TRAINED** representatives from all interested parties who have authority to make decisions.

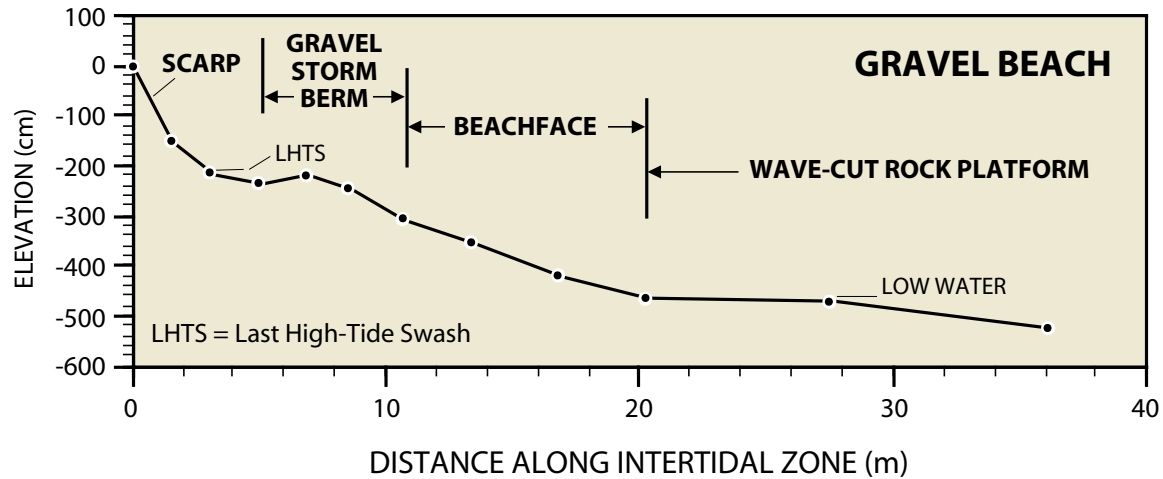
NOAA published the Shoreline Assessment Manual (Report No. HAZMAT 97-4) which outlines methods for planning and conducting shoreline assessment and incorporating the results into the decision-making process for shoreline cleanup at oil spills. This job aid was developed to supplement the manual, providing a visual guide to many of the terms used during shoreline assessments.

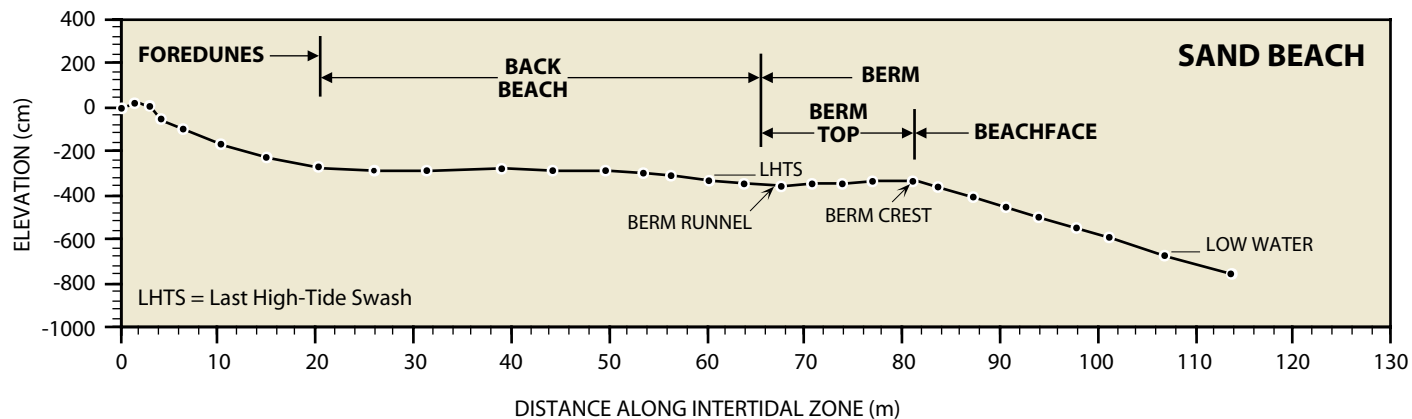
Photographs are included for the following terminology:

- Oil distribution (as ranges in percent oil cover)
- Surface oiling thickness descriptors
- Surface oiling type descriptors
- Subsurface oiling type descriptors
- Sediment types
- Shoreline types
- Cleanup methods

Beach terminology is defined on typical cross-sections of sand and gravel beaches. Percent cover estimation charts are also provided.

At a spill, it is important to “calibrate” by having all team members visit a segment together and agree on how the oiling descriptors will be applied for the specific spill when used with the *Shoreline Assessment Manual*. This job aid is helpful for calibrating and promoting consistency among terms.





C

Continuous

91-100% cover

(seen here as black oil on light sand beach)



Broken

51-90% cover

(seen here as brown oil on tan sand beach)

B



6 SURFACE OIL DISTRIBUTION – Percent Cover

P

Patchy

11-50% cover

(seen here as black oil bands on a white sand beachface)



Sporadic

1-10% cover

(seen here as brown oil bands on a white sand beachface)

S



P0

Pooled Oil

fresh oil or mousse > 1 cm thick

(seen here as accumulation around a large boulder)

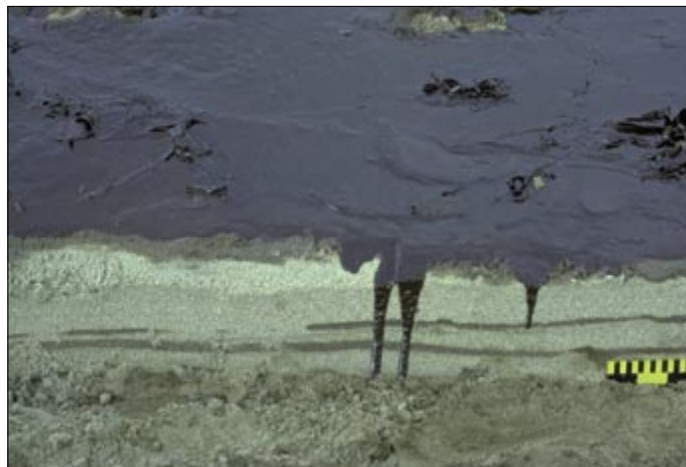


Cover

oil or mousse > 0.1 cm to < 1 cm thick

(seen here as oil covering sand beach surface and running into a small trench)

CV



CT

Coat

visible coating of oil < 0.1 cm – can be scraped off with fingernail

(seen here as a thin layer of oil on riprap)

**Stain**

visible oil which cannot be scraped off with fingernail

(seen here as splotches on cobbles)

ST

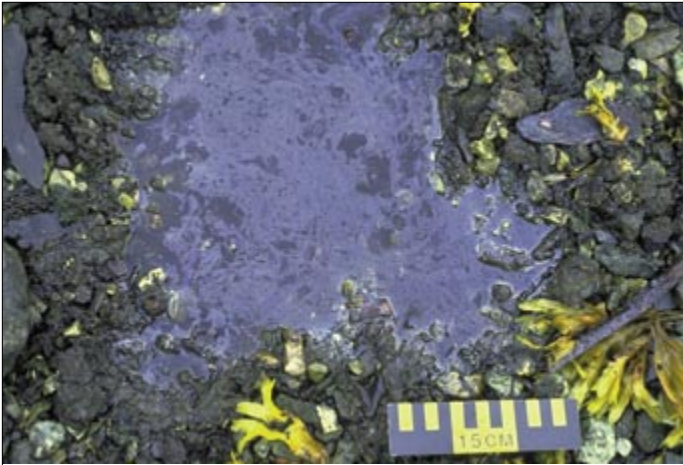


FL

Film

transparent or iridescent sheen, or oily film

(seen here as oil sheen floating on water)



FR

Fresh Oil

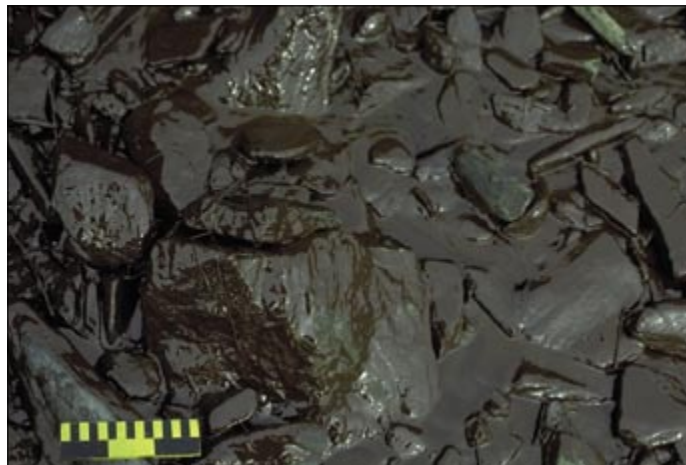
unweathered, liquid oil



MS

Mousse

emulsified oil

(seen here as brown oil coating cobbles)

TB

Tarballs

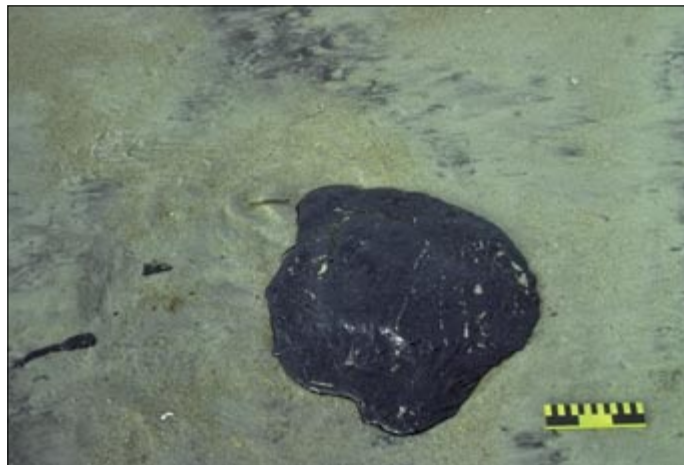
discrete accumulations of oil < 10 cm in diameter
(seen here scattered on sand beach)



PT

Patties

discrete accumulations of oil > 10 cm in diameter
(seen here as single black patty on sand beach)



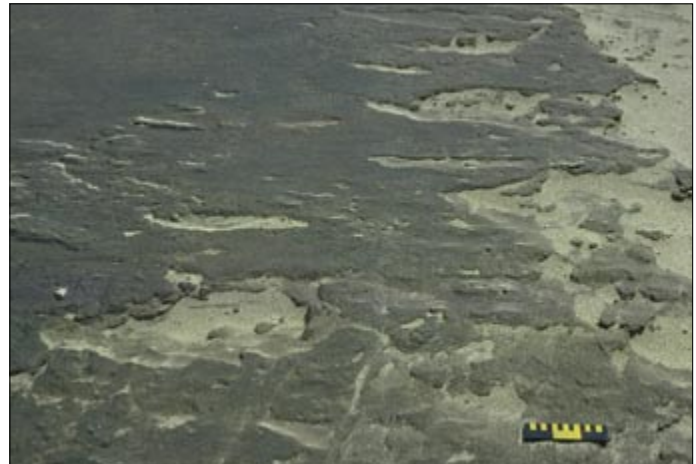
TC

Tar

highly weathered oil of nearly solid consistency

**Surface Oil Residue**non-cohesive, heavily oiled surface sediments
characterized as soft, incipient asphalt
pavements

SR





Asphalt Pavements

cohesive, heavily oiled surface sediments

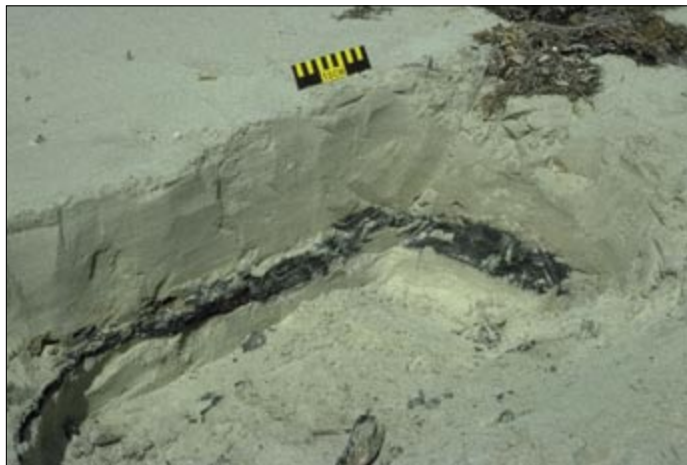
(seen here as thick black deposit on a beachface)



SAP

Subsurface Asphalt Pavement

a buried layer of hardened oil

(seen here as black layer buried in a white sand beach)**Oil-filled Pores**

pore spaces are completely filled with oil to the extent that oil flows out of sediments when disturbed

(seen here as brown oil pebbles)

OP



PP

Partially Filled Pores

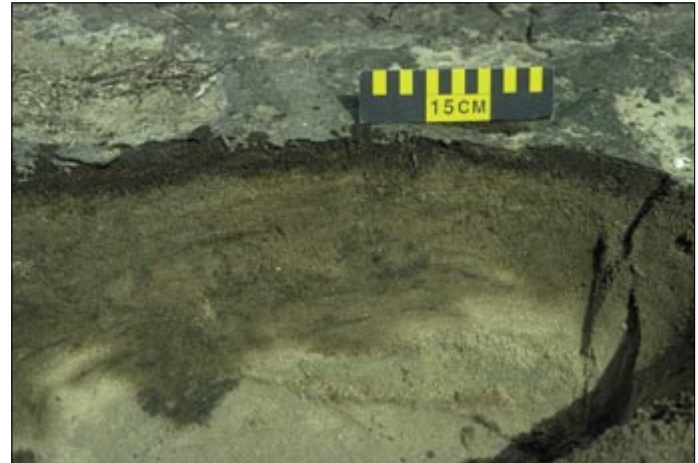
pore spaces filled with oil, but generally does not flow out when disturbed



Oil Residue

sediments visibly oiled with black/brown coat or cover on clasts, but little or no accumulation of oil within pore spaces

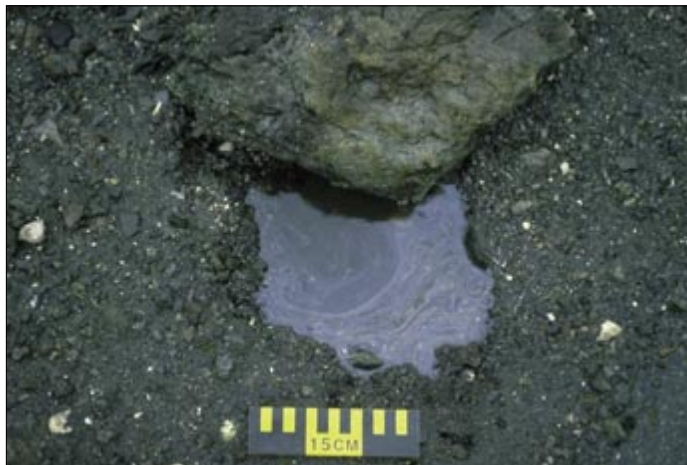
OR



OF

Oil Film

sediments are lightly oiled with an oil sheen or stain on the clasts.



R

Bedrock Outcrop



Boulder
>256 mm in diameter

B



C

Cobble

64 – 256 mm in diameter

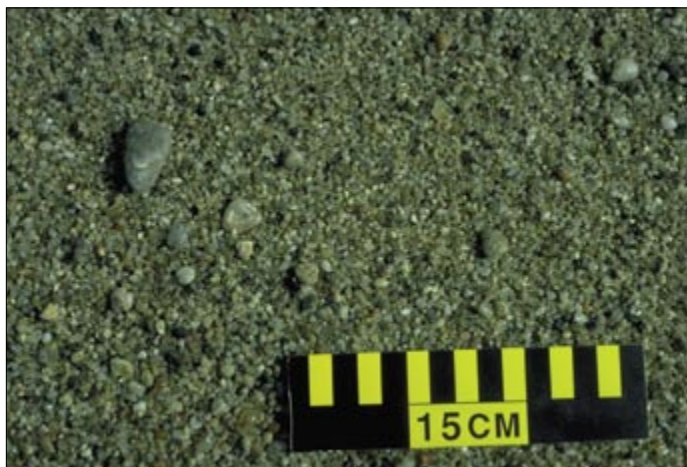
**Pebble**
4 – 64 in diameter

P



G

Granule
2 – 4 mm



Sand
0.06 – 4 mm

S



M

Mud

silt and clay



1

Exposed Rocky Shores

(also includes exposed seawalls)



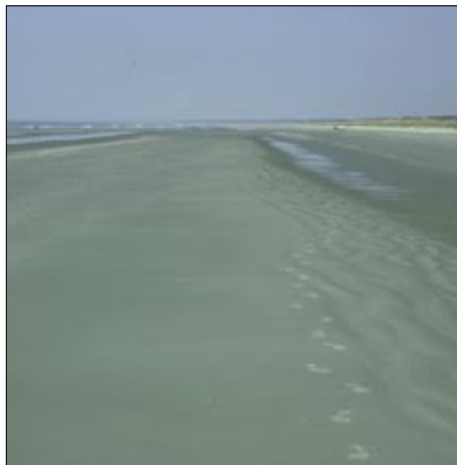
Exposed Rocky Platforms

(also includes clay scarps)

2



3

**Fine-grained
Sand Beaches***(also includes scarps in sand)*

4

**Course-grained
Sand Beaches**

5

**Mixed Sand and
Gravel Beaches***(also includes mixed sand and shell
beaches)*

6a

Gravel Beaches
(also includes shell beaches)



6b

**Riprap
Structures**



Exposed Tidal Flats

7



8a

**Sheltered
Rocky Shores**



8b

**Sheltered
Man-made Structures**



9

**Sheltered
Tidal Flats**



10_a

Salt to Brackish Marshes



Freshwater Marshes

10_b



10_c

Swamps



Mangroves

10_d

Barriers/Berms



Physical Herding



Manual Oil Removal/Cleaning**Mechanical Oil Removal**

Sorbents



Vacuum



Debris Removal**Sediment Reworking/Tilling**

Vegetation Cutting/Removal



Flooding (deluge)

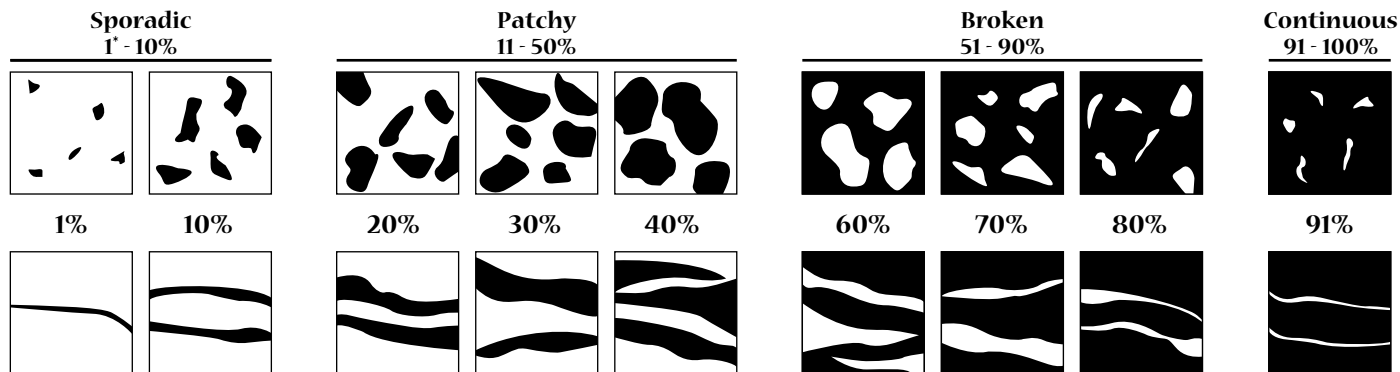


Low-pressure Flushing**High-pressure Flushing**

High-pressure, Hot-water Flushing

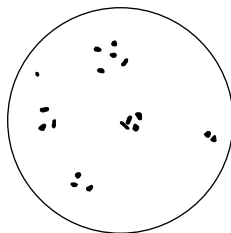


These charts are aids to help you estimate the percent oil coverage in the area you are observing. The black shading represents oil. Do not spend time trying to get a precise measure of percent cover; the four ranges listed are usually sufficient. The chart below would prove most helpful in oil band situations; the one on the following page is best for discrete oil deposits such as tarballs.

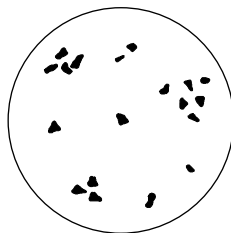


* Trace = < 1%

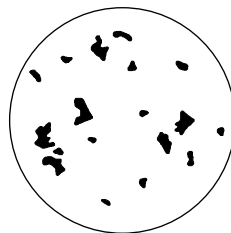
Chart source: Owens, E.H., and G.A. Sergy. Field Guide to the Documentation and Description of Oiled Shorelines. Environment Canada, Edmonton, Alberta, Canada. March 1994. ISBN 0-662-22048-X.



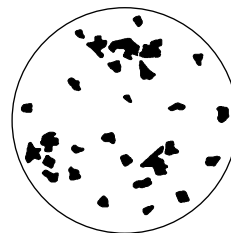
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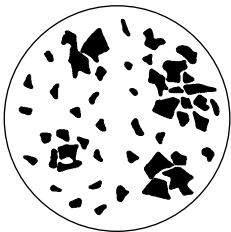
3%



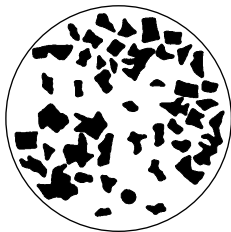
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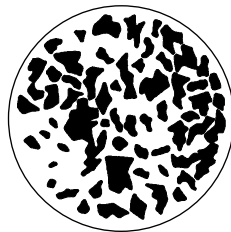
10%



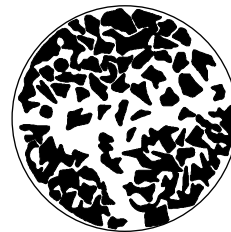
20%



30%



40%



50%



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